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ABSTRACT

This paper proposes and tests the theory that the "unidimensional" classroom structure is an underlying component of the traditional student performance reality which determines the relatively low school performance levels of ethnic minorities. It is argued that "multidimensional" structures should reduce the degree of performance inequality between ethnic status groups by altering the fundamental structure of academic performance in the classroom. Operationalizing "unidimensionally structured classrooms" as those characterized by little curricular differentiation and by frequent use of letter or number grades, 17 third grade public school classrooms in San Francisco were selected to represent extremely unidimensional and extremely multidimensional structures. Teachers' ratings of performance in three subjects and students' self concepts in those subjects were obtained for 334 students, 110 of whom were black or Chicano students. Performance inequality between ethnic minority and nonminority students was found to be significantly greater in unidimensional classrooms than in multidimensional classrooms. This held when objective teacher ratings were used but not when subjective self concepts were used to measure performance levels. Differences in degree of performance inequality cannot be accounted for by students' background characteristics. It was also found that the greater performance inequality in unidimensional classrooms resulted from the different performance realities experienced in each type of classroom, not from greater teacher prejudice. (Author/AM)

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The Impact of Classroom Structure on Performance Inequality Between Minority and Non-Minority Students

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ABSTRACT

This paper proposes and tests the theory that "unidimensional" classroom structure is an underlying component of the traditional student performance reality which determines the relatively low performance levels of ethnic minorities. Therefore, it is argued, more "multidimensional" structures should reduce the degree of performance inequality between ethnic status groups by altering the fundamental structure of academic performance in the classroom. Ethnic performance inequality is seen not as a result of individual backgrounds but as an interplay between backgrounds and the performance structure institutionalized in traditional educational settings.

Operationalizing "unidimensionally structured classrooms" as those characterized by little curricular differentiation and by frequent use of letter or number grades, 17 third grade public school classrooms were selected to represent extremely unidimensional and extremely multidimensional structures. Teachers' ratings of performance in three subjects and students' self concepts in those subjects were obtained for 334 students, 110 of whom were black or Chicano students.

Performance inequality between ethnic minority and non-minority students is found to be significantly greater in unidimensional classrooms than in multidimensional classrooms. This holds when objective teacher ratings are used but not when subjective self concepts are used to measure performance levels. Differences in degree of performance inequality can not be accounted for by students' background characteristics. It is also found that, as predicted, the greater performance inequality in unidimensional classrooms results not from greater teacher prejudice but from the different performance realities experienced in each type of classroom. In particular, after controlling students' first grade scores on a standardized reading test, both the large ethnic performance bias in unidimensional classes and the small bias in multidimensional classes disappear. This is argued to occur because ethnic performance bias is produced universalistically through the performance reality typical of traditional classrooms -- the same reality represented by students' scores on tests standardized on the basis of traditional educational settings. Multidimensional classrooms are less biased than others because they are less influenced by that traditional reality. This is illustrated by the finding that first grade test scores predict third grade performance significantly less well in multidimensional than in unidimensional classes.

The fact that minority students perform less well in school than other students is disturbing. Meritocratic education is supposed to reduce ethnic inequality rather than incorporate it. This apparent failure of meritocracy gives rise to both applied and theoretical problems. There are various theoretical approaches to the problem of explaining ethnic inequality in a system which explicitly describes itself as giving equal opportunity to all. These include arguments that 1) ethnic minorities are biologically inferior, so that performance inequality is inevitable and acceptable (Jensen, 1969), 2) teachers' ethnic or social class prejudices produce inequality (Rist, 1970), 3) forcing a multi-cultural student body into a monocultural school setting tends to deny members of minority cultures opportunity to learn (Baratz and Baratz, 1970), and 4) the purpose of schooling is in fact more to legitimate inequality than to reduce it (Greer, 1972).

Applied attempts to reduce ethnic performance inequality have been disappointing. Studies of desegregation programs come to conflicting conclusions (St. John, 1975). Compensatory education programs have not produced encouraging results (Corwin, 1974:292-3). Further, the attempt to locate any consistent effect of any indicator of school quality on student performance has proven frustrating (Jencks and Brown, 1975). Work by Cohen and Roper (1972; see also Cohen, Lockheed and Lohman, 1976) offers some encouragement by showing that black students' "interaction disability" can be overcome, but this method has yet to be used widely.

These attempts to change schooling so as to reduce ethnic performance inequality are no doubt beset with myriad practical obstacles. Beyond these, however, change efforts rely on theoretical interpretations of

the nature and causes of inequality, and much of the applied failure may be attributed to theoretical failure. Theories about the role of genetics or early family socialization are incapable of generating school based change because schools have no control over these factors. Most desegregation studies remain conceptually primitive in that they do not specify the conditions under which desegregation would be expected to improve minority students' performances. Compensatory education is based on the naive judgement that performance can be improved by giving children more of the same type of schooling which now fails them. The failure of these experiments indicates that performance inequality is deeply institutionalized in the educational system and that more fundamental changes than these are needed to eliminate it. This conclusion necessitates a search for different analyses which interpret the causes of status related performance inequality in terms of the basic structure of schooling and also in terms of factors which can be affected by policy makers. The following study was undertaken with these objectives in mind.

The Social Construction of Inequality

This analysis begins from a "social construction of reality" perspective (see Berger and Luckmann, 1966). We argue that ethnic inequality is a deeply institutionalized element of the reality experienced by teachers and students. As a part of the educational institution, much inequality exists even in the absence of teacher prejudice; the "bias" against minority students is a natural product of the universalistic operation of traditional forms of schooling. Consistent with this, we argue that ethnic inequality arises through the same mechanisms which

create individual inequality. This is to say, ethnic inequality arises not from ascriptive discrimination but as part of the normal universalistic process used by schools to stratify individual students. Therefore, the goal of eliminating ethnic bias in schools implies changing the very reality structured for students and teachers by the educational institution.

Working from these assumptions, we ask which fundamental characteristics of classrooms contribute to the particular form of individual inequality traditionally produced in schools. That form of course includes performance inequality between minority and non-minority students. The characteristic of classroom structure to be focused on in this paper is the dimensionality of classroom structure during instruction.

Parsons describes the traditional classroom as one in which students are differentiated on only one dimension -- academic performance. He also notes that this dimension contains few separate components, describing students' academic work as "...a common set of tasks which is, compared to most other task areas, strikingly undifferentiated" (Parsons, 1959:302). From the complex of students' varying background experiences, interests and abilities, this traditional performance structure distills a set of standardized, unidimensional comparisons which differentiate students. Such a pattern of differentiation is consistent with the belief in a single underlying dimension of ability illustrated by widespread use of IQ and other standardized tests. These tests assign to individuals single numerical scores which are then used to estimate probable success in school.

In multidimensional settings, such singular, clear-cut differentiation is much less likely to occur. Assuming that students enter the classroom with wide background differences in many areas, and assuming that these

differences are not perfectly correlated, the inclusion of multiple performance dimensions in the classroom will inhibit development of clear-cut global inequality. If one student excels in one area and another excels in a second area, it cannot be said that either is generally superior.

Such multidimensional performance structures are also less likely than traditional classroom structures to produce inequality of performance across ethnic groups. As the number of performance dimensions increases, the likelihood that minority students will excel on some dimensions of performance increases. Under unidimensional performance structures, systematic differences among individuals, such as language usage, or cultural background differences between ethnic groups must produce performance inequality. Only one language and one culture can be fully embedded in such a narrow structure. Given the power distribution in our society, it is natural that such unidimensionally structured performance reality will articulate more closely with background advantages of those from more privileged segments of society, resulting in weaker performances by minority group students.

Selecting Classroom Characteristics For Study

The analysis presented above leads to the theoretical assertion that unidimensional classroom performance structure, typical of traditional schooling, is a determinant of performance inequality across ethnic status groups. For this proposition to be useful to applied change efforts, indicators of unidimensional structure must be susceptible to change by policy makers. Further, to test this proposition non-experimentally we must choose indicators which vary somewhat among available classrooms. Fortunately, the recent past was a period of considerable educational

experimentation along "open classroom" lines. The variability among classrooms resulting from this experimentation allows us to develop dimensionality indicators which deal with fairly basic aspects of institutional patterns and yet can be changed and in fact are changing.

This study centers on two types of indicators defining dimensionality of classroom structure: curricular differentiation and grading policy. Characteristics of curriculum structure which indicate multidimensionality are: number of different materials used during typical instruction, frequency that instructional or performance media other than language are used (visual media or manipulative media such as puzzles or games), and the degree of autonomous student choice concerning their own academic work. Each of these indicators, described in detail in Simpson (1975) taps an aspect of differentiation which can occur in students' academic task structure.

The second dimensionality indicator used here is whether teachers grade students' work. Grades are singular symbols taking on unidimensional comparative meaning from the abstract numerical system which defines them. Grades are capable of unidimensionalizing even relatively complex performances because they reduce information to single numbers, because these numbers can be averaged, and because teachers and student peers can use these numbers to categorize each other comparatively.

These two indicators of performance structure dimensionality specify variations on a basic schooling theme. They are not revolutionary changes. Nonetheless, classrooms described as unidimensional or multidimensional using these indicators differ in theoretically meaningful ways. If such classrooms produce different degrees of ethnic inequality, as we predict, we may interpret those findings as implying that more radical changes could produce even greater change in the degree of ethnic performance inequality.

HYPOTHESES

The argument presented in this paper holds that school performance inequality between ethnic groups is a part of the reality created by traditional unidimensional classroom structure. Unidimensional performance structure determines the structure of individual inequality in the classroom, with ethnic inequality as a part of that inequality structure. We define two indicators of classroom unidimensionality -- curricular differentiation and frequency of grading -- and predict that classrooms with relatively undifferentiated curricular structure and those which grade student work will produce greater ethnic performance inequality than will multidimensional classes. More specifically, three hypotheses are tested in this study:

Hypothesis I: Students' objectively measured academic performance levels will be more closely associated with ethnic status in unidimensional than in multidimensional classes.

Hypothesis II: Students' perceptions of their own performances in school will bee more closely associated with ethnic status in unidmensional than in multidimensional classes.

Hypothesis III: The closer relationship between performance level and ethnic status hypothesized to occur in unidimensional classrooms will be interpretable in universalistic terms. That is, we can explain why the relationship between status and performance is greater in unidimensional classes without references to prejudice on the part of the particular teachers.

RESEARCH DESIGN AND SAMPLE

These schools were selected from a survey of 150 public elementary schools in the greater San Francisco Bay area in which principals had

reported the degree of curricular complexity typifying their schools. Based on this information, ethnically mixed schools which appeared to be the most unidimensional and most multidimensional in the sample were chosen. In this way we gained great variance of classroom structure and therefore enhanced our power to test the hypotheses outlined above. Within each school we sampled all third graders, the youngest students whose reading experience made a questionnaire survey feasible. The less school a student has experienced, the more that student should be affected by the current classroom. Each student answered his/her own questionnaire as the researcher read the questions aloud to insure reliable responses. In addition, teachers reported students' performance levels and informed us about the organization of their classrooms. In all, six schools containing 17 third grade classes agreed to participate. Three hundred thirty four students completed questionnaires about one month before the end of their third grade year in spring, 1973. Of these, 110 were black or chicano students.

Once the sample was selected, we relied on teachers' reports to measure classroom structure. Principals report for the entire school while teachers report patterns in their own specific classes. While teachers' reports did not always agree with principals' reports, the correspondence was considerable with the result that our sample contains two quite distinct clusters of classrooms -- one where no work is graded and curricular complexity is relatively high and another where all or most work is graded and curricular differentiation is low. Since the two indicators of unidimensional structure are closely associated and since the sample is both small and biomodal, the sample was simply divided into two categories for analysis — eight unidmensional and nine multidimensional classes. Classes were assigned on the basis of patterns in arithmetic and reading instruction.

RESULTS

Effects of Classroom Structure on the Relation Between Ethnic Status and Academic Performance

Hypothesis I asserts that beyond whatever simple effects ethnic status may have on performance level in all classrooms, and beyond whatever effect classroom organization may have on all students, there will be an additional effect of ethnic status on performance in unidimensional classes. That is, ethnic status will have more impact on performance level in unidimensional than in multidimensional classes. To test this possibility we employ ordinary least squares regression techniques with dummy variables representing each independent variable.[1]

For the variable "classroom structure" we score unidimensional classes "1" and multidimensional classes "0". For "ethnic status" we score black and chicano students "1" and other "0". To test the interaction of classroom and status, we multiply these two variables together with the result that minority students in unidimensional classes are scored "1" and all others are scored "0". If this term has a significant positive effect on performance level, we will have evidence that minority status depresses performance level more in unidimensional than in multidimensional classes.

We begin by noting that for the entire sample, the performance level of minority students is significantly lower than that of non-minority students. Means for minority and non-minority students respectively are: 3.18 and 2.54 for arithmetic ($p \leq .001$), 3.07 and 2.36 for reading ($p \leq .001$), and 3.08 and 2.38 for social studies ($p \leq .001$), where "1" indicates "excellent" performance and "5" indicates that the student is "having serious problems." As expected, minority students perform

significantly less well than others. Jencks (1972) points out that American school systems are characterized by such great individual inequality that the inequality between status groups is small by comparison. This is true in the sample studied here. Even so, the difference between ethnic status groups is considerable.

TABLE 1 ABOUT HERE

Table 1 presents three tests of hypothesis I -- one for each subject area for which we have teachers' reports of students performance levels. Figures are unstandardized regression coefficients. Since each independent variable is scored 0,1, these coefficients represent the difference on the five point teacher rating scale between group means (e.g., minority and non-minority). The consistency of patterns across all three subject areas lends considerable support to hypothesis I. In each of the three subjects the inclusion of the interaction term reduces the simple effect of ethnic status on performance (not shown). In each case the estimated effect of the interaction term is in the predicted direction — i.e., being a minority student in a unidimensional classroom is associated with performance deficit greater than that experienced by minority students in multidimensional classes.

These linear estimates take on a stark reality when particular categories of student performance are examined. Comparing the proportions of students in below average categories, we find about the same proportion of non-minority students performing below average (lowest two categories) in both unidimensional and multidimensional classes. In reading, for example, figures are 16.8% and 11.7%, respectively. Among minority students, however, 50.1% perform below average in unidimensional classes while 24.1% perform below average in multidimensional classes. Further, viewing

only the lowest performance category, "having serious problems," 15% of minority students in unidimensional classes and only 3% in multidimensional classes are included.

Since some terms in the full model presented in table 1 are not significant we may further specify our test of hypothesis I by entertaining more parsimonious reduced forms of the model. Hierarchical comparisons based on the F ratio statistic indicate that we do not significantly reduce explanatory power by accepting the models shown in figure 1. For math, the preferred model includes only an effect of ethnic status on math performance. Little is added by considering effects of classroom structure. For reading and social studies, on the other hand, the preferred model contains only the interaction term, indicating that minority students perform less well only in unidimensional classrooms. This finding is quite striking. Hypothesis I predicts less effect of status on performance in multidimensional classes, but drawing on a public school sample we did not anticipate finding a group of classrooms where ethnic status has no significant effect on performance. In the unidimensional classrooms sampled, on the other hand, estimates generated under the models shown in figure 1 show that minority status in unidmensional classes decreases students' performance level by nearly one full point on a five point scale. The average non-minority student performs well above "average," while the average black student performs below "average."

FIGURE 1 ABOUT HERE

Pursuing this matter, we may ask why findings for math differ from those for reading and social studies. One possibility is that the organization of math instruction corresponds less well with our classification of classrooms than does the organization of reading and social studies instruction. Upon

inspection of teacher reports in each area, however, we find this is not the case. Another possibility -- one preferable on theoretical grounds -- is that in mathematics, learning relies less on language than in reading and social studies. Math, in part a language of its own, has an explicit rule structure which may transcend classroom structure, making math instruction insensitive to changes which multidimensionalize classroom structure.

For reading and social studies, on the other hand, instruction and performance occur almost exclusively through written or spoken language. Following the bicultural or multicultural model of minority student performance deficit, it may be argued that language is a fundamental part of students' cultural heritage and that unidimensional classroom structure restricts language use so narrowly that minority students suffer. By the same token, language based instruction can be multidimensionalized. The same academic substance or skills may be taught through different language forms, so that structures may be opened to include alternatives appropriate to different learners.

Effects of Classroom Structure On the Relation Between Ethnic Status and Academic Self Concepts.

Hypothesis II predicts that unidimensional classroom structure will increase the impact of ethnic status on students' perception of their own performance levels -- their academic self concepts. We begin by testing the zero order association between ethnic status and academic self concepts. As table 2 indicates, none of these academic self concept measures is significantly associated with ethnic status. While teachers' reports of student performance levels are clearly associated with ethnic status, these subjective self reports show no such association.

TABLE 2 ABOUT HERE

Not only do students' subjective academic self concepts fail to reflect performance differences associated with ethnic status, but they also fail to reflect accurately the even greater inequality among individuals which is indicated by teachers' ratings of student performance. The correlations between teacher ratings and academic self concepts are .22 for arithmetic, .35 for reading and only .03 for social studies. These self concept reports may be random or capricious or based on factors not considered here. It appears however, that the subjective realm of self concepts allows considerable leeway to ignore objective facts. Extensive pretests in which we discussed with children what their answers meant to them convinced us that third graders understand these issues and answered our questions seriously. Their interpretations may differ from adult views, but their answers appear to tap reliably their own subjective perceptions. At any rate, these data support neither hypothesis II nor the assumption behind it, that self concept would be associated with ethnic status.

Universalistic Bias

Hypothesis III argues that the differential between minority and non-minority performance levels can be explained universalistically, without reference to teacher bias. We have found that teacher ratings of student performance in three subject areas reflect a performance deficit on the part of minority students. Findings for two subject areas include the hypothesized effect of classroom structure on the degree of deficit. This paper has argued that classroom structure affects the degree of minority performance deficit by altering the performance reality of those classrooms, thereby altering the structure of performance inequality. This perspective

allows us to integrate two conclusions which would usually be thought contradictory: 1) that minority students are reported to perform much less well in one set of classrooms than in another, and 2) that these reports are in all cases universalistic "unbiased" assessments of objective performance levels. These two conclusions are seen as inconsistent because objective performance is usually thought determined by individual ability, something classroom structure cannot alter, and because differences in ethnic bias across classrooms are normally assumed to be caused by biased reports from prejudiced teachers. Prejudice must be inputted to teachers because of the prior assumption that the institutional structure of schooling plays no part in creating minority performance deficit. From this conventional perspective, the findings of this paper would imply that teachers in unidimensional classrooms are more prejudiced than those in multidimensional classes. There is, however, no a priori reason why this should be. Nevertheless, the reality construction interpretation offered in this paper is unusual enough that we must consider the alternative explanation of teacher prejudice.

We already know that mathematics performance is equally influenced by ethnic status in unidimensional and multidimensional classrooms, whereas ethnic status influences reading and social studies performance only in unidimensional classes. To be consistent, the teacher prejudice thesis would have to argue that teachers in multidimensional classes are prejudiced about math performance only, while teachers in unidimensional classes are actually a little less prejudiced regarding math than regarding other subject areas. It is unlikely that prejudice against ethnic minorities would be subject area specific, so that these findings argue against the alternative explanation that individual teachers' prejudiced reporting creates the effects we attribute to classroom structure.

Beyond this, we ask whether our findings of minority student deficit can be explained in terms of a standardized measure of early school performance -- first grade scores on the Cooperative Primary Test of reading skill. Such standardized tests are the ultimate logical extension of the principle of impersonal, universalistic evaluation. Of particular interest here is the fact that these tests cannot be influenced by the teachers in our sample. If the greater ethnic bias in unidimensional classrooms results from the prejudices of particular teachers, that bias could not be accounted for by students' scores on standardized tests. If these test scores do account for ethnic bias, we may conclude that the bias is universalistic. Our argument is not however the traditional one that minority students' inferior performance is determined by "ability differences" measured with standardized tests. We have already found that the degree of minority performance deficit depends on classroom structure. Therefore, no explanation cast purely in terms of individual students' backgrounds can be sufficient.

The analysis reported in table 3 tests hypothesis III and provides information concerning the nature of ethnic performance deficit. The impact of ethnic status and of reading test score on performance in each subject area is calculated separately among students in multidimensional classes and students in unidimensional classes. This form of parallel analysis is used because it most clearly illustrates the principle that classroom structure affects minority performance bias by affecting the determinants of performance within the classroom. The findings shown in table 3 lead to several interrelated conclusions.

TABLE 3 ABOUT HERE

First, the larger minority performance deficit found in unidimensional classrooms is not the result of prejudice on the part of individual teachers.

After test score is controlled, the direct effect of ethnic status is no greater in these classrooms than in multidimensional classes. Thus, teacher prejudice, the effects of which are contained in this term of the equation, cannot be a useful explanation for our findings regarding the impact of classroom structure on minority student deficit. This means both that teachers in unidimensional classrooms do not seem to hold particularly virulent prejudices and that teachers in multidimensional classes do not appear to "compensate" by inflating minority students' ratings.

Second, controlling first grade reading test score not only eliminates the interaction between classroom structure and ethnic status in determining school performance, but it also eliminates any effect of ethnic status on performance. With one exception, math performance in multidimensional classes, the estimated effect of ethnic status on school performance never reaches statistical significance after test score is controlled. Estimated effects of status are consistently positive, but if ethnic status has effects beyond those which operate through test score, these effects are modest at most. From this we conclude that teacher prejudice is not a useful explanation for minority performance deficit in any classrooms in our sample, no matter how structured.

Third, table 3 shows that the greater association between ethnic status and student performance level in unidimensional classrooms may be explained by the greater impact of test score on performance in those classrooms. This interaction between classroom structure and test score on performance is significant for both reading and social studies.[2] Minority students perform less well on standardized reading tests than do non-minority students, regardless of which classroom they enter. Because of this, the greater impact of test score on performance level in unidimensional classes produces

the greater association between ethnic status and performance in those classes. In the case of math performance, the impact of test score on performance does not differ significantly by type of classroom organization, with the result that degree of minority performance deficit does not depend on classroom organization.

These three findings taken together provide consistent support for hypothesis III and indicate the value of the social construction of reality approach taken in this study. The greater minority performance deficit in unidimensional classrooms is caused not by surface interpretations such as prejudicial teacher reports, but by the character of the performance reality created in the classroom.

The Variable Meaning of Standardized Test Scores

The finding that the impact of test score on student performance varies with classroom structure is worthy of further consideration. How can it be that test scores are more predictive in one type of classroom than in another? Research measuring the impact of standardized test scores on performance level typically argues that early ability causes later performance. A weak effect would be interpreted as indicating an inadequate test had been used. In these data, however, the same test is a more adequate predictor in one situation than in another. While conventional interpretations must treat these findings as exceptional, they are perfectly consistent with the viewpoint developed in this paper. Test scores predict academic performance to the extent that the nature of academic performance is identical to the nature of test performance. Reduced to the absurd, this is obvious. Reading scores are poor predictors of running speed. More importantly, the reality of what constitutes legitimate academic performance varies among classrooms. We often lose sight of this fact because traditional

classrooms create such invariant performance realities and because the process of standardization maximizes the correspondence between standardized test performance and performance in traditional educational settings. This paper offers evidence that these settings are biased against minority students, just as are standardized tests.

The multidimensional classrooms we study here create a different reality, however. In particular, "academic performance" is a more complex, differentiated phenomenon. Performance in these classrooms therefore corresponds less well with the narrowly standardized reality of first grade reading tests. For the same reasons performance in such classrooms is less related to ethnic status. Minority students in these classes may score as poorly as those in unidimensional classes if they take standardized tests during their fourth grade year. But that matters less to these students than to those in unidimensional classes, for the daily academic reality they experience, perform in, and are evaluated in terms of, differs substantially from the reality tapped by standardized tests.

DISCUSSION

Studying a sample of classrooms specifically selected to maximize variation on theoretically derived dimensions of classroom structure, we have found a) that relatively objective indicators of students' classroom performances indicate greater performance deficit associated with minority status in unidimensional than in multidimensional classes, b) that this greater deficit may be explained as resulting from the fact that the qualities of performance are more similar in unidimensional classes than multidimensional classes to the qualities which determine scores on standardized tests, c) that the predicitive accuracy of standardized tests varies with classroom

structure, and d) that neither ethnic status nor classroom structure affects students' subjective academic self concepts. In the final section of this paper some implications of these findings are discussed.

Assuming the perspective presented in this paper is correct, two concrete policy recommendations may be made. The first is that multidimensionalizing classrooms may help reduce ethnic status bias in school performance. The second is that standardized tests should not be used to evaluate programs attempting to change school so as to improve performance levels of minority students.

Multidimensionalizing Classrooms. The goal of creating classrooms in which ethnic status is not a determinant of performance level is widely accepted, but has proven most difficult to effectuate. The evidence presented here suggests that making classroom structure less unidimensional may reduce the status related differential in student performances. We cannot specify which elements of multidimensional structure are most beneficial to minority students, but we do have evidence that opening up multiple dimensions of instruction and performance, along with removing pressures toward assigning single symbolic evaluations (grades) to students has the desired effect. Dimensionality is a measurable concept and is a manipulable feature of social systems such as classrooms. For the moment, lacking more specific knowledge of learner-method interactions, it seems that opening options is a workable way to reduce ethnic inequality.

The Limits of Standardized Tests. The meaning of standardized tests is not a constant. Our findings indicate 1) that within traditionally structured school reality standardized tests do have some meaning -- they measure something closely related to academic performance in these classrooms -- but 2) that it is possible to alter classroom reality so that these tests

are much less closely associated with performance levels. These findings suggest that standardized test scores are a reflection of a particular reality -- one which includes considerable bias against ethnic minorities. Logically, these scores may not therefore be evoked as evidence that ethnic inequality is impossible to overcome (as in Jensen, 1968).[3] If the reality changes such that ethnic bias is overcome, these tests will simply cease to provide information accurately representing performance in that new reality. That is, test scores are part of a particular reality institutionalized in the U.S. educational system, not an unchangeable cause of inequality within that system. As such, test scores may be used to map out elements of traditional schooling reality but may not be evoked as argument concerning the feasibility of changing the nature of that reality. Under traditional assumptions, change is conceived in terms of improving the position of individuals or groups within the traditional schooling reality. Since standardized tests are part of that reality, they provide meaningful information about the success or failure of such endeavors. But the goal of eliminating ethnic inequality necessitates restructuring entire realities. Standardized tests are systematically insensitive to the very type of change which must be assessed in such cases. If school reality changes, standardized tests simply become less accurate, continuing to reflect traditional school reality. Since that traditional reality includes ethnic status inequality, standardized tests will report the presence of ethnic inequality whether or not it has in fact been eliminated in a particular school. The very success of these tests at representing an abstracted version of traditional school reality makes them incapable of indicating whether that reality has changed. It follows that such tests should not be used to evaluate attempts to equalize minority and non-minority academic performance.

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Table 1. Effects of Ethnic Status, Classroom Unidimensionality and Their Hypothesized Interaction on Students' Performance Levels, as Reported by Teachers.

	Independent Variables:				
	ethnic status	classroom structure	status/structure interaction (hypothesis I)	R^2	N
Dependent Variables:					
arithmetic performance	.39[1] (.20)	.19 (.15)	.30 (.26)	.091	319
reading performance	.30 (.21)	.29 (.16)	.55* (.27)	.137	298
social studies performance	.28 (.20)	.31* (.13)	.52* (.25)	.16	295

[1] Figures are unstandardized regression slopes. Stanford errors are shown in parentheses.

* significant at p = .05.

Dependent measures: teachers were asked to report how well or poorly each of their students performed, using the following scale: 1=excellent, 2=good, 3=average, 4=weak and 5=having serious problems.

Table 2. Mean Academic Self Concepts by Ethnic Status.

	self concept measure*			
	school work	arithmetic	reading	social studies
means for non-minority students	2.84 (n=213)	2.56 (n=216)	2.16 (n=213)	2.63 (n=214)
means for minority students	2.85 (n=108)	2.37 (n=110)	2.06 (n=110)	2.54 (n=110)
	F=.02 ns	F=2.22 ns	F=.66 ns	F=.46 ns

* Students were asked: "How good are you at (self concept area), compared to all other third graders?" Scale: 1=a lot better, 2=a little better, 3=about the same, 4=a little worse, 5=a lot worse.

Table 3. Effects of First Grade Reading Test Scores and Ethnic Status on Performance Within Multidimensional and Unidimensional Classes[1]

Dependent Variable:	Students in Unidimensional Classes (n=93)			Students in Multidimensional Classes (n=85)		
	test score	ethnic status	R^2	test score	ethnic status	R^2
arithmetic performance	.82** (.47)	.40 (.16)	.30	.60** (.39)	.55* (.20)	.23
reading performance	1.2** (.65)	.27 (.11)	.49	.62** (.41)	.015 (.01)	.17
social studies performance	.80** (.50)	.41 (.18)	.35	.35* (.24)	.15 (.06)	.07

[1] Figures in this table are unstandardized regression coefficients. Test score is scaled as grade level equivalents. Because the independent variables are differently scaled, we include standardized Betas in parentheses for the reader's convenience.

*significant at $p \leq .05$

**significant at $p \leq .001$

Figure 1. Graphical Representation of the Preferred Model Specifying Effects Tested in Table 1.